

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently amended): A cosmetic preparation comprising a cationic polymer which is produced by the process comprising:

polymerizing in a polymerization vessel from 3 to 30% by weight of at least one quaternary nitrogen-comprising free-radically polymerizable monomer (a1) and/or a direct preproduct (a2) thereof ~~in the presence of~~

~~from 70 to 97% by weight of at least one polyether-comprising compound (b),~~

from 0 to 15% by weight of one or more first additional free-radically polymerizable monomer (c) having a solubility in water above 60 g/l at 25°C and

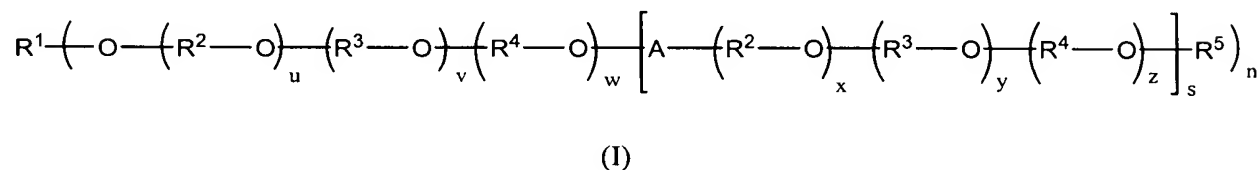
from 0 to 15% by weight of one or more second additional free-radically polymerizable monomer (d) having a solubility in water of less than 60 g/l at 25°C,

in the presence of from 70 to 97% by weight of at least one polyether-comprising compound (b),

wherein

the at least one quaternary nitrogen-comprising free-radically polymerizable monomer (a1) and/or a direct preproduct (a2) thereof is at least one selected from the group consisting of 3-methyl-1-vinylimidazolium chloride, 3-methyl-1-vinylimidazolium methylsulfate and N,N-dimethyl-N,N-diallylammonium chloride,

the polyether-comprising compound (b) is represented by the formula I,



wherein

R<sup>1</sup> is independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>6</sup>-C(=O)-, R<sup>6</sup>-NH-C(=O)-, and polyalcohol radical;

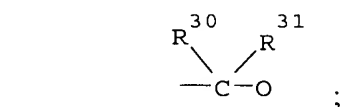
R<sup>5</sup> is independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>6</sup>-C(=O)-, and R<sup>6</sup>-NH-C(=O)-;

R<sup>2</sup> to R<sup>4</sup> are independently selected from the group consisting of -(CH<sub>2</sub>)<sub>2</sub>-, -(CH<sub>2</sub>)<sub>3</sub>-, -(CH<sub>2</sub>)<sub>4</sub>-, -CH<sub>2</sub>-CH(R<sup>6</sup>)-, and -CH<sub>2</sub>-CHOR<sup>7</sup>-CH<sub>2</sub>-;

R<sup>6</sup> is C<sub>1</sub>-C<sub>24</sub>-alkyl;

R<sup>7</sup> is independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>6</sup>-C(=O)-, and R<sup>6</sup>-NH-C(=O)-;

A is selected from the group consisting of -C(=O)-O-, -C(=O)-B-C(=O)-O-, -CH<sub>2</sub>-CH(-OH)-B-CH(-OH)-CH<sub>2</sub>-O-, -C(=O)-NH-B-NH-C(=O)-O-, and



B is selected from the group consisting of -(CH<sub>2</sub>)<sub>t</sub>-, substituted arylene and unsubstituted arylene;

R<sup>30</sup>, R<sup>31</sup> are independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, C<sub>1</sub>-C<sub>24</sub>-hydroxyalkyl, benzyl and phenyl;

n is 1 when R<sup>1</sup> is not a polyalcohol radical or

n is 1 to 1 000 when R<sup>1</sup> is a polyalcohol radical

s is 0 to 1 000;

t is 1 to 12;

u is 1 to 5 000;

v is 0 to 5 000;

w is 0 to 5 000;

x is 0 to 5 000;

y \_\_\_\_\_ is 0 to 5 000; and

z \_\_\_\_\_ is 0 to 5 000;

the water content in the reaction mixture during the polymerization is less than 20% by weight;

if the polymerization vessel comprises the preproduct (a2), said preproduct (a2) is converted at least partially into a compound comprising quaternary nitrogen (a2') subsequently to or during said polymerizing;

the molar ratio of the sum of the at least one quaternary nitrogen-comprising free-radically polymerizable monomer (a1), the compound comprising quaternary nitrogen (a2') and the one or more first additional free-radically polymerizable monomer (c) to the sum of the one or more second additional free-radically polymerizable monomer (d) is at least 2 to 1; and

the percentages by weight of the at least one quaternary nitrogen-comprising free-radically polymerizable monomer (a1) and/or a direct preproduct (a2) thereof, the at least one polyether-comprising compound (b), the one or more first additional free-radically polymerizable monomer (c) and the one or more second additional free-radically polymerizable monomer (d) add up in each case to 100% by weight.

Claims 2-4 (Canceled).

Claim 5 (Withdrawn-Currently amended): The cosmetic preparation as claimed in claim 1, wherein ~~said polymerization vessel~~ the at least one quaternary nitrogen-comprising free-radically polymerizable monomer (a1) comprises a mixture of 3-methyl-1-vinylimidazolium methylsulfate and N,N-dimethyl-N,N-diallylammonium chloride ~~as the at~~

~~least one quaternary nitrogen comprising free-radically polymerizable monomer (a1).~~

Claims 6-8 (Canceled).

Claim 9 (Currently amended): The cosmetic preparation as claimed in claim [[6]] 1, wherein said conversion of the preproduct (a2) to the compound comprising quaternary nitrogen (~~a2'~~) (a1) occurs in the presence of an alkyl halide having 1 to 24 carbon atoms, a dialkyl sulfate having 1 to 24 carbon atoms, an alkylene oxide or an epichlorohydrin.

Claim 10 (Canceled).

Claim 11 (Currently amended): The cosmetic preparation as claimed in claim [[10]] 1, wherein said conversion of the preproduct (a2) to the compound comprising quaternary nitrogen (~~a2'~~) (a1) occurs in the presence of a trialkylamine.

Claim 12 (Previously presented): The cosmetic preparation as claimed in claim 1, wherein the one or more first additional free-radically polymerizable monomer (c) is selected from the group consisting of N-vinyl lactams, N-vinylcarboxamides, hydroxyalkyl acrylates, ethylenically unsaturated amides, vinylimidazoles, unsaturated acids and unsaturated amines.

Claim 13 (Previously presented): The cosmetic preparation as claimed in claim 1, wherein the one or more first additional free-radically polymerizable monomer (c) is selected from the group consisting of N-vinylpyrrolidone, N-vinylpiperidone, N-vinylcaprolactam, N-vinylformamide, N-ethyl-N-vinylacetamide or N-methyl-N-vinylacetamide, 2-hydroxyethyl

acrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl methacrylate, butanediol monoacrylate, acrylamide, methacrylamide, N-vinylimidazole, acrylic acid, maleic acid, methacrylic acid, 2-acrylamido-2-methylpropanesulfonic acid, dimethylaminoethyl acrylate and dimethylamino methacrylate.

Claim 14 (Previously presented): The cosmetic preparation as claimed in claim 1, wherein the one or more second additional free-radically polymerizable monomer (d) is selected from the group consisting of C<sub>1</sub>-C<sub>10</sub>-alkyl esters of monoethylenically unsaturated C<sub>3</sub>-C<sub>6</sub>-carboxylic acids, di-C<sub>1</sub>-C<sub>10</sub>-alkyl esters of ethylenically unsaturated dicarboxylic acids, hydrocarbons having at least one free-radically polymerizable carbon-carbon double bond, vinyl, vinylidene or allyl halides, vinyl, allyl and methallyl esters of C<sub>1</sub>-C<sub>40</sub> linear, C<sub>3</sub>-C<sub>40</sub> branched-chain or C<sub>3</sub>-C<sub>40</sub> carbocyclic carboxylic acids of aliphatic, saturated and unsaturated nature, vinyl, allyl and methallyl ethers of linear or branched, aliphatic alcohols having 2 to 20 carbon atoms.

Claim 15 (Previously presented): The cosmetic preparation as claimed in claim 1, wherein the one or more second additional free-radically polymerizable monomer (d) is selected from the group consisting of methyl acrylate, ethyl acrylate, propyl acrylate, n-butyl acrylate, isobutyl acrylate, t-butyl acrylate, 2-ethylhexyl acrylate, decyl acrylate, methyl methacrylate, ethyl methacrylate, propyl methacrylate, n-butyl methacrylate, isobutyl methacrylate, t-butyl methacrylate, 2-ethylhexyl methacrylate, decyl methacrylate, methyl ethacrylate, ethyl ethacrylate, n-butyl ethacrylate, isobutyl ethacrylate, t-butyl ethacrylate, 2-ethylhexyl ethacrylate, decyl ethacrylate, stearyl acrylate, stearyl (meth)acrylate, preferably styrene, alpha-methylstyrene, tert-butylstyrene, butadiene, isoprene, cyclohexadiene, ethylene, propylene, 1-butene, 2-butene, isobutylene, vinyltoluene, vinyl chloride, vinylidene

chloride, allyl chloride, vinyl acetate, vinyl propionate, vinyl butyrate, vinyl valerate, vinyl hexanoate, vinyl 2-ethylhexanoate, vinyl decanoate, vinyl laurate, vinyl stearate, vinyl methyl ether, vinyl ethyl ether, vinyl dodecyl ether, vinyl hexadecyl ether, vinyl stearyl ether, acrylamidoglycolic acid, fumaric acid and crotonic acid.

Claim 16 (Canceled).

Claim 17 (Currently amended): The cosmetic preparation as claimed in claim [[16]]  
1, wherein

the polyether-comprising compound (b) has an average molecular weight of from 500 to 50 000 (number-average)

$R^1$  is independently selected from the group consisting of hydrogen,  $C_1-C_6$ -alkyl,  $R^6-C(=O)-$ , and  $R^6-NH-C(=O)-$ ;

$R^5$  is independently selected from the group consisting of hydrogen,  $C_1-C_6$ -alkyl,  $R^6-C(=O)-$ , and  $R^6-NH-C(=O)-$ ;

$R^2$  to  $R^4$  are  $-(CH_2)_2-$ ,  $-(CH_2)_3-$ ,  $-(CH_2)_4-$ ,  $-CH_2-CH(R^6)-$ , and  $-CH_2-CHOR^7-CH_2-$ ;

$R^6$  is  $C_1-C_6$ -alkyl;

$R^7$  is independently selected from the group consisting of hydrogen,  $C_1-C_6$ -alkyl,  $R^6-C(=O)-$ , and  $R^6-NH-C(=O)-$ ;

$n$  is 1;

$s$  is 0;

$u$  is 5 to 500;

$v$  is 0 to 500; and

w is 0 to 500.

Claim 18 (Previously presented): The cosmetic preparation as claimed in claim 1, wherein the polyether-comprising compound (b) is a polymer, copolymer or block copolymer of at least one compound selected from the group consisting of ethylene oxide and propylene oxide.

Claims 19-21 (Canceled).

Claim 22 (Previously presented): The cosmetic preparation as claimed in claim 1, wherein

the percentages by weight of the at least one quaternary nitrogen-comprising free-radically polymerizable monomer (a1), the at least one polyether-comprising compound (b), the one or more first additional free-radically polymerizable monomer (c) and the one or more second additional free-radically polymerizable monomer (d) add up to 100% by weight.

Claim 23 (Currently amended): The cosmetic preparation as claimed in claim 1, wherein the cationic polymer is produced by polymerizing 4 – 12% by weight of the at least one quaternary nitrogen-comprising free-radically polymerizable monomer a1) ~~is present from 4 – 12% by weight~~ in the presence of from 88 – 96% by weight of the at least one polyether-comprising compound b) ~~is present from 88 – 96% by weight~~ ~~the one or more first additional free-radically polymerizable monomer c) is present from 0% by weight~~ ~~the one or more second additional free-radically polymerizable monomer d) is present from 0% by weight~~

and the percentages by weight of the at least one quaternary nitrogen-comprising free-radically polymerizable monomer (a1) and the at least one polyether-comprising compound (b) add up to 100% by weight.

Claim 24 (Currently amended): A cationic polymer produced by the process comprising:

polymerizing in a polymerization vessel:

from 3 to 30% by weight of at least one cationic, quaternary, free-radically polymerizable monomer (a1) ~~in the presence of~~

~~from 70 to 97% by weight of at least one polyether-comprising compound (b);~~

from 0 to 15% by weight of one or more first additional free-radically polymerizable monomer (c) having a solubility in water above 60 g/l at 25°C and

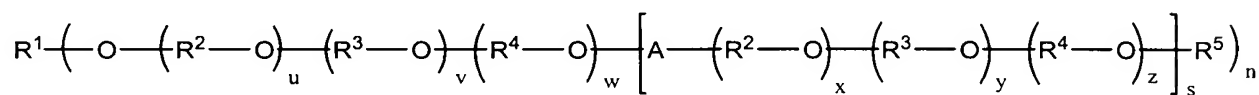
from 0 to 15% by weight of one or more second additional free-radically polymerizable monomer (d) having a solubility in water below 60 g/l at 25°C,

in the presence of from 70 to 97% by weight of at least one polyether-comprising compound (b),

wherein

the at least one quaternary nitrogen-comprising free-radically polymerizable monomer (a1) and/or a direct preproduct (a2) thereof is at least one selected from the group consisting of 3-methyl-1-vinylimidazolium chloride, 3-methyl-1-vinylimidazolium methylsulfate and N,N-dimethyl-N,N-diallylammonium chloride,

the polyether-comprising compound (b) is represented by the formula I,



(I)



wherein

R<sup>1</sup> is independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>6</sup>-C(=O)-, R<sup>6</sup>-NH-C(=O)-, and polyalcohol radical;

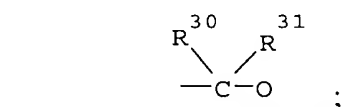
R<sup>5</sup> is independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>6</sup>-C(=O)-, and R<sup>6</sup>-NH-C(=O)-;

R<sup>2</sup> to R<sup>4</sup> are independently selected from the group consisting of -(CH<sub>2</sub>)<sub>2</sub>-, -(CH<sub>2</sub>)<sub>3</sub>-, -(CH<sub>2</sub>)<sub>4</sub>-, -CH<sub>2</sub>-CH(R<sup>6</sup>)-, and -CH<sub>2</sub>-CHOR<sup>7</sup>-CH<sub>2</sub>-;

R<sup>6</sup> is C<sub>1</sub>-C<sub>24</sub>-alkyl;

R<sup>7</sup> is independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>6</sup>-C(=O)-, and R<sup>6</sup>-NH-C(=O)-;

A is selected from the group consisting of -C(=O)-O-, -C(=O)-B-C(=O)-O-, -CH<sub>2</sub>-CH(-OH)-B-CH(-OH)-CH<sub>2</sub>-O-, -C(=O)-NH-B-NH-C(=O)-O-, and



B is selected from the group consisting of -(CH<sub>2</sub>)<sub>t</sub>-, substituted arylene and unsubstituted arylene;

R<sup>30</sup>, R<sup>31</sup> are independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, C<sub>1</sub>-C<sub>24</sub>-hydroxyalkyl, benzyl and phenyl;

n is 1 when R<sup>1</sup> is not a polyalcohol radical or

n is 1 to 1 000 when R<sup>1</sup> is a polyalcohol radical

s is 0 to 1 000;

t is 1 to 12;

u is 1 to 5 000;

v is 0 to 5 000;

w is 0 to 5 000;

x is 0 to 5 000;

y is 0 to 5 000; and

z is 0 to 5 000;

the molar ratio of the sum of the at least one cationic, quaternary, free-radically polymerizable monomer (a1) and the one or more further free-radically polymerizable monomer (c) to the sum of the one or more second additional free-radically polymerizable monomer (d) is at least 2 to 1,

the water content in the reaction mixture during the polymerization is less than 20% by weight, and

the percentages by weight of the at least one cationic, quaternary, free-radically polymerizable monomer (a1), at least one polyether-comprising compound (b), the one or more further free-radically polymerizable monomer (c) and the one or more second additional free-radically polymerizable monomer (d) add up to 100% by weight.

Claims 25-26 (Canceled).

Claim 27 (Previously presented): A process for the preparation of cationic polymers as claimed in claim 24, the process comprising:

polymerizing from 3 to 30% by weight of at least one cationic, quaternary free-radically polymerizable monomer (a1) in the presence of

from 70 to 97% by weight of at least one polyether-comprising compound (b)

from 0 to 15% by weight of one or more first additional free-radically polymerizable monomer (c) having a solubility in water of more than 60 g/l at 25°C and optionally

from 0 to 15% by weight of one or more second additional free-radically polymerizable monomer (d) having a solubility in water of less than 60 g/l at 25°C, wherein the molar ratio of the sum of the at least one cationic, quaternary free-radically polymerizable monomer (a1) and the one or more first additional free-radically polymerizable monomer (c) to the sum of the one or more second additional free-radically polymerizable monomer (d) is at least 2 to 1,

the water content in the reaction mixture during the polymerization is less than 20% by weight, and

the percentages by weight of the at least one cationic, quaternary free-radically polymerizable monomer(a1), the at least one polyether-comprising compound (b), the one or more first additional free-radically polymerizable monomer (c), and the one or more second additional free-radically polymerizable monomer (d) add up to 100% by weight.

Claim 28 (Previously presented): A hair cosmetic formulation comprising:

- a) 0.05 – 20% by weight of the cosmetic preparation as claimed in claim 1,
- b) 20 – 99.95% by weight of water and/or alcohol and
- c) 0 – 79.05% by weight of additional constituents.

Claim 29 (Previously presented): A hair cosmetic formulation comprising:

- a) 0.1 – 10% by weight of the cosmetic preparation as claimed in claim 1,
- b) 20 – 99.9% by weight of water and/or alcohol
- c) 0 – 70% by weight of a propellant and
- d) 0 – 20% by weight of additional constituents.

Claim 30 (Previously presented): A hair cosmetic formulation comprising:

- a) 0.1 – 10% by weight of the cosmetic preparation as claimed in claim 1,
- b) 55 – 94.8% by weight of water and/or alcohol
- c) 5 - 20% by weight of a propellant
- d) 0.1 - 5% by weight of an emulsifier and
- e) 0 – 10% by weight of additional constituents.

Claim 31 (Previously presented): A hair cosmetic formulation comprising:

- a) 0.1 – 10% by weight of the cosmetic preparation as claimed in claim 1,
- b) 60 – 99.85% by weight of water and/or alcohol
- c) 0.05 – 10% by weight of a gel former and
- d) 0 – 20% by weight of additional constituents.

Claim 32 (Previously presented): A hair cosmetic formulation comprising:

- a) 0.05 – 10% by weight of the cosmetic preparation as claimed in claim 1,
- b) 25 – 94.95% by weight of water
- c) 5 – 50% by weight of surfactants
- d) 0 – 5% by weight of a conditioning agent and
- e) 0 – 10% by weight of additional cosmetic constituents.